

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SECURITY- JAPAN:KK

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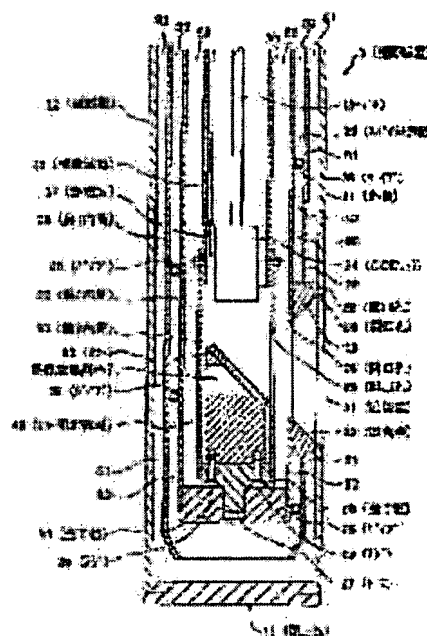
(72)Inventor : SHIMOKAWA MIKIO

(54) DEVICE FOR OBSERVING INSIDE OF FURNACE UNDER HIGH TEMPERATURE ENVIRONMENT

(57)Abstract:

**PROBLEM TO BE SOLVED:** To allow a CCD camera to be used to observe continuously a state of the inside of a furnace under a high temperature environment such as an electric furnace and a coke oven by cooling efficiently the CCD camera.

**SOLUTION:** Cooling water supplied from a supply water and supply gas device is led in a spiral tube 35 formed between a 1st inner cylinder 23 and a 2nd inner cylinder 26, the water is discharged to a tip inside of an outer cylinder 21 while being fed in spiral therein and returned to a cooling section via a cylindrical space formed between the 1st inner cylinder 23 and the outer cylinder 21. A cooling gas fed from the supply water and supply gas device is led to a space formed between the 2nd inner cylinder 26 and a 3rd inner cylinder 30 and in the inside of the 3rd inner cylinder 30 respectively and discharged to the outside of the outer cylinder 21 from a supervisory window 31.



## CLAIMS

### [Claim(s)]

[Claim 1] In the observation equipment in an elevated-temperature ambient atmosphere furnace which photos the condition in said elevated-temperature ambient atmosphere furnace by the photography section inserted into the elevated-temperature ambient atmosphere furnace said photography section Have two or more cylinder part material which it is arranged in the shape of the sequential abbreviation same axle inside an outer case and this outer case, and a path dwindle, and a pipe is spirally arranged to one of each of the cylindrical space formed between this outer case and each cylinder part material. Constitute spiral passage and cooling water is poured into said spiral passage from former one end of said photography section. Observation equipment in an elevated-temperature ambient atmosphere furnace characterized by cooling said photography section by draining said cooling water to former one end of said photography section through one of the cylindrical space of other after leading cooling water to the tip side of said photography section compulsorily and stirring cooling water the optimal in this tip side.

[Claim 2] In the observation equipment in an elevated-temperature ambient atmosphere furnace according to claim 1, opening of the point of said pipe is carried out to the tip side of said photography section. Emit the cooling water poured in into said pipe from former one end of said photography section from tip opening of this pipe to the tip side of said spiral passage, and stagnation cooling water is stirred. the object for wastewater -- said -- others -- the observation equipment in an elevated-temperature ambient atmosphere furnace characterized by returning this cooling water to former one end of said photography section, and cooling said photography section by allotting spiral \*\*\*\*\* and forming the wastewater passage of the shape of this spiral in cylindrical space.

[Claim 3] In the observation equipment in an elevated-temperature ambient atmosphere furnace which photos the condition in said elevated-temperature ambient atmosphere furnace by the photography section inserted into the elevated-temperature ambient atmosphere furnace One of each cylindrical space formed among two or more cylinder part material which constitutes said photography section While pouring cooling Ayr into the cylinder part material core space where the video camera which changes into an electrical signal the light figure which carried out incidence through the monitor aperture formed in the tip side of each of said cylinder part material is arranged from former one end of said photography section and cooling the photography section Observation equipment in an elevated-temperature ambient atmosphere furnace characterized by making this cooling Ayr emit out of said photography section from said monitor aperture.

[Claim 4] Observation equipment in an elevated-temperature ambient atmosphere furnace characterized by making it balance the amount of said cooling Ayr poured into said cylindrical space, and the amount of said cooling Ayr poured into the cylinder part material core space where said video camera is arranged in the observation equipment in an elevated-temperature ambient atmosphere furnace according to claim 3.

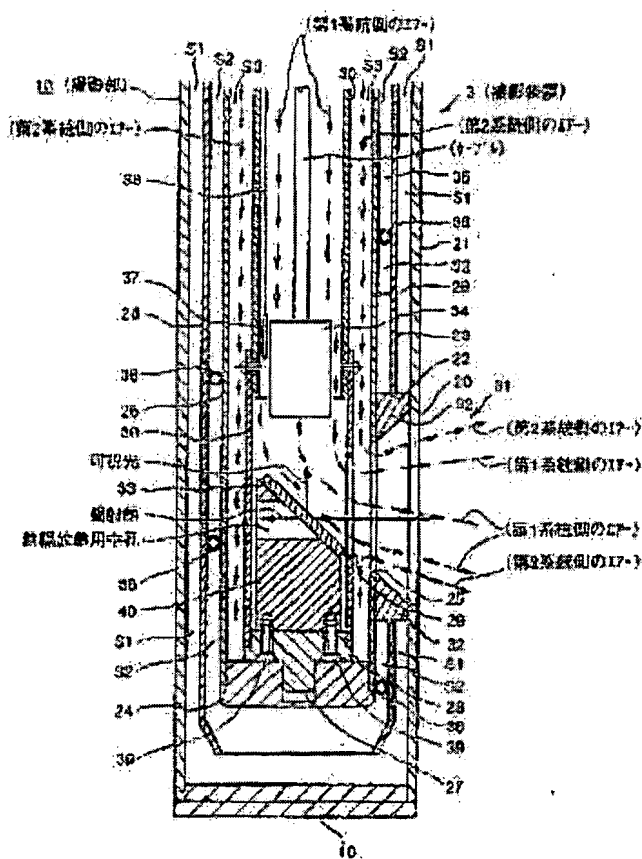
[Claim 5] In the observation equipment in an elevated-temperature ambient atmosphere furnace given in either of claims 1, 2, 3, and 4 Prepare a wavelength discriminator inside said monitor aperture formed in the tip side of said photography section, and the heat ray component in the light figure which carries out incidence through said monitor aperture by this wavelength discriminator is cut. Observation equipment in an elevated-temperature ambient atmosphere furnace characterized by carrying out incidence only of the light component in said light figure to said video camera.



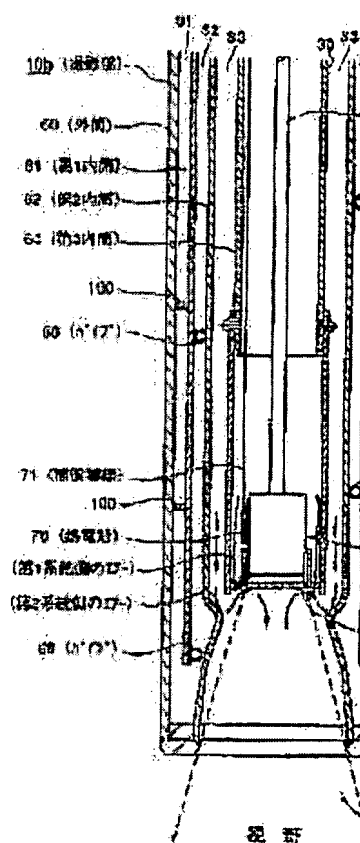
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【図4】



【図11】

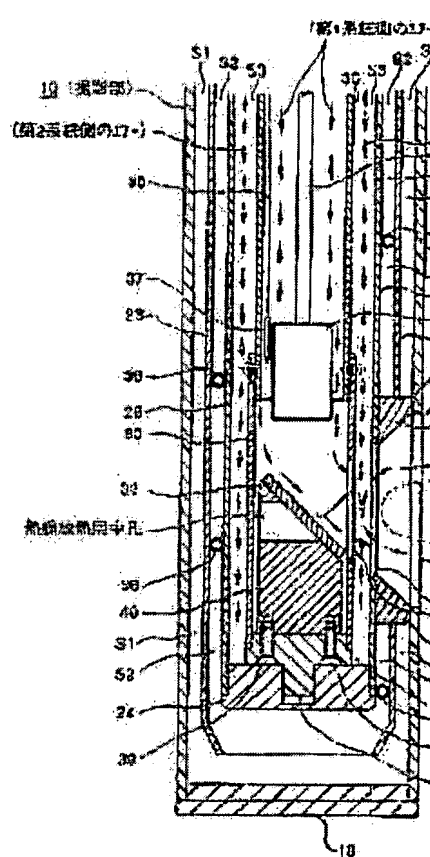
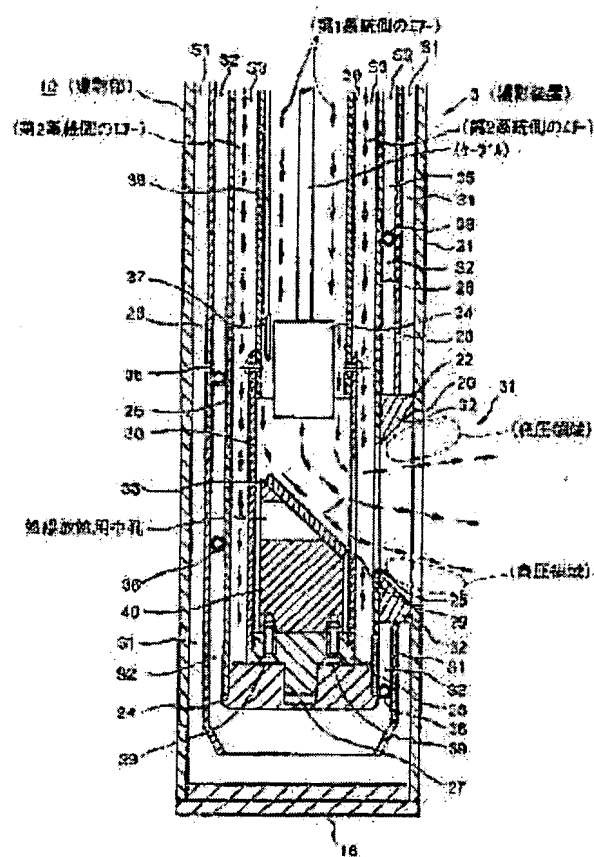


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【図5】

【図6】

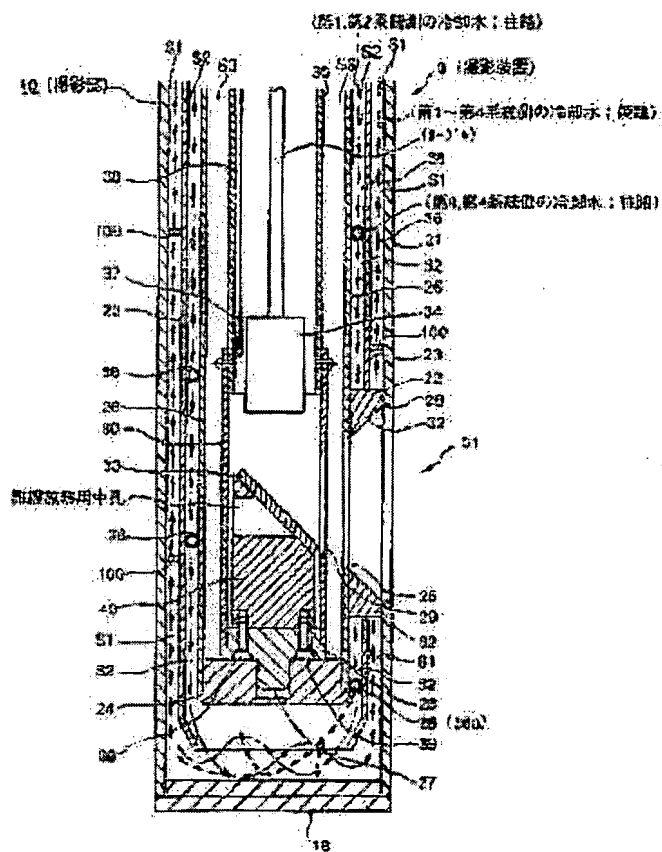




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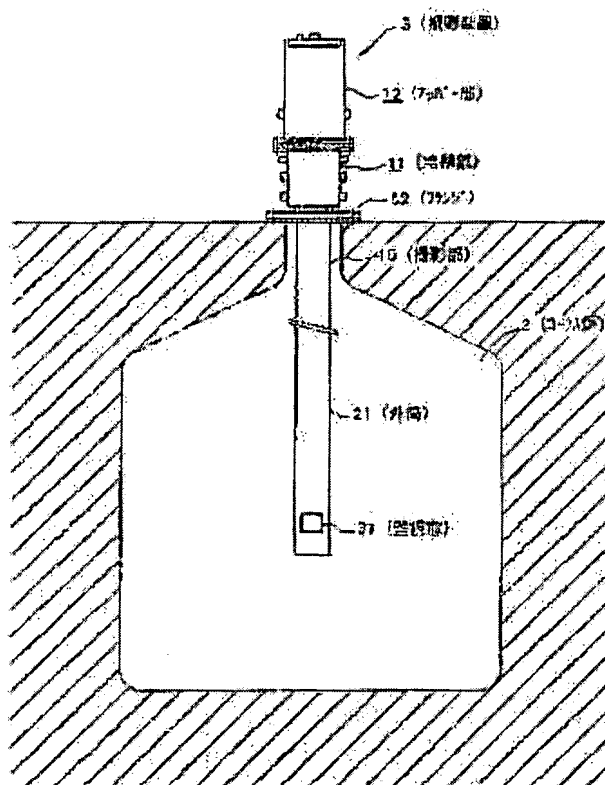
【圖 8】



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【図9】



【図10】

